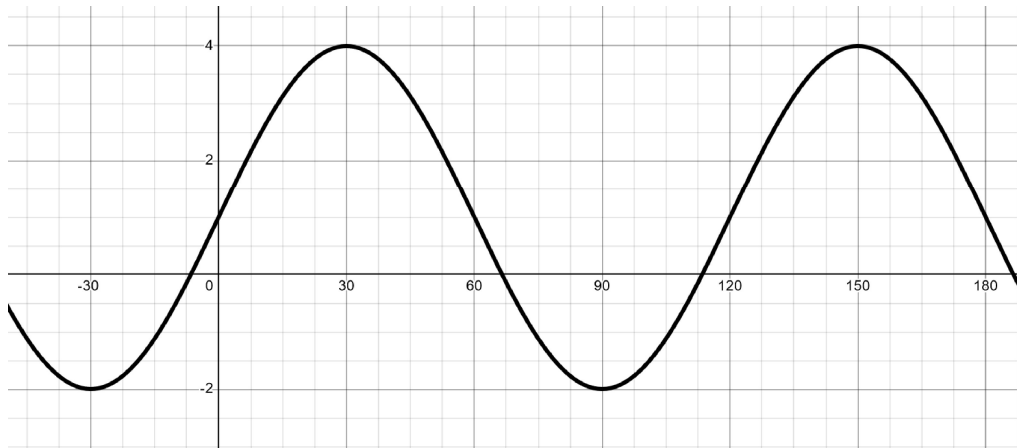


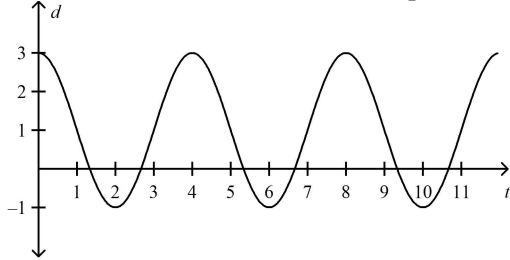
8. Determine both a sine and a cosine function which represents the given sketch.



9. Fred is riding a Ferris wheel while his friends track his motion using a stop watch. The friends notice that Fred reaches the maximum height of $18m$ at 10sec , and then reaches a minimum height of $2m$ at 40sec . Determine a sinusoidal equation which describes Fred's motion around the wheel.

10. Lydia holds the end of a yo-yo string 0.9 metres from the ground and swings the yo-yo in a circle perpendicular to the ground. After 0.5 seconds, the yo-yo is at its closest point to the ground, 0.1 metres. After 1 second, the yo-yo is at its farthest point from the ground, 1.7 metres.
- What is the amplitude of the function that represents the yo-yo's distance from the ground in terms of the seconds that have passed, and what does it represent?
 - What is the period of the function representing the spinning yo-yo and what does the period represent?

11. A scientist records the motion of a particle. A graph of that motion is shown below.



- What is the period of one complete cycle?
- What is the range of this function?
- If the particle can survive for twenty complete cycles before deteriorating, determine the domain of the function.

12. Determine if the following tables might represent periodic functions. Explain your reasoning for each table.

a)

| x | y |
|-----|-----|
| -2 | 1 |
| -1 | 3 |
| 0 | 4 |
| 1 | 1 |
| 2 | 3 |
| 3 | 4 |
| 4 | 1 |

b)

| | | | | | | | |
|-----|---|----|---|----|----|----|----|
| x | 1 | 2 | 4 | 8 | 16 | 32 | 64 |
| y | 3 | 10 | 3 | 10 | 3 | 10 | 3 |

c)

| x | y |
|-----|-----|
| -12 | 12 |
| -7 | 10 |
| -2 | 15 |
| 3 | 18 |
| 8 | 14 |
| 13 | 9 |
| 18 | 22 |